

Fecal microbiota transplant cures *C. diff*, blocks multi-drug resistant pathogens

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A fecal microbiota transplant (FMT) not only cured a case of *Clostridium difficile* (*C. diff*) infection in a 66 year old man; it eliminated populations of multi-drug resistant organisms both in the patient's gastrointestinal tract, and several other body sites. This case report is published ahead of print April 15 in the *Journal of Clinical Microbiology*, a publication of the American Society for Microbiology.

The patient suffered from quadriplegia and multiple other conditions, requiring a ventilator, a feeding tube, and chronic foley catheterization. As a result of his complex medical needs, he was admitted to the [intensive care unit](#) at Scripps Mercy Hospital in San Diego, California. Within the first week, he was diagnosed with *C. diff colitis*, and treated with oral antibiotics. However, whenever the antibiotics were tapered, the *C. diff* rapidly relapsed. Concurrently, a number of multi-drug resistant organisms were isolated from the patient, which led to repeated infections.

Ultimately, the doctors suggested fecal microbiota transplant, and the patient's sister volunteered to be the donor, and passed the screening tests for infectious diseases and parasites. The doctors injected the material using a colonoscope, after discontinuation of antibiotics.

During the next two years and until the patient died, the *C. diff* never returned. Although methicillin-resistant *Staphylococcus aureus* (MRSA) did recolonize his urinary tract several months after the [fecal transplant](#), the many other antibiotic-resistant microbes did not, despite his ongoing

stay in the intensive care unit.

"The fecal microbiota transplant was successful in replenishing the patient's [gut flora](#) and stopping the releases of *Clostridium difficile*," said Nancy Crum-Cianflone, MD, an infectious disease specialist at Scripps Mercy Hospital, San Diego, CA. "Intriguingly, we additionally found that by letting the normal bacteria replenish his [gastrointestinal tract](#), the resistant bacteria which had plagued him up to that point, disappeared from his body."

"Patients, especially those in long-term facilities, receive numerous courses of antibiotics that almost invariably result in both colonization and infections from multi-drug resistant organisms, and in the end with bacteria resistant to all antibiotics," said coauthor Gonzalo Ballon-Landa, MD, also an infectious disease specialist at Scripps Mercy Hospital. "This paper indicates that replenishing the normal gut flora and keeping these patients off antibiotics can result in the disappearance of multi-drug resistant organisms from the patients' bodies and thus potentially save their lives."

Clostridium difficile causes inflammation of the large intestine, resulting in diarrhea. It is particularly a problem in older adults receiving hospital care, and caused an estimated half million infections in 2011, with 29,000 deaths occurring within 30 days post-diagnosis, according to the US Centers for Disease Control and Prevention.

Fecal microbiota transplant uses fecal material, which is largely composed of microbiota, from a healthy donor, to provide "good bacteria" as a therapeutic agent. Fecal transplant has recently become an area of intense scientific investigation. It has been demonstrated to cure *C. diff* at a rate of 90 percent plus, vastly superior to antibiotic treatment, and investigators are testing it as a treatment for other conditions. A Medford, Massachusetts-based company, OpenBiome,

now screens donors and ships stool to hospitals all over the US, and even abroad.

The rationale behind the technique lies in the fact that the healthy, intact human microbiome strongly resists invasion by pathogens because the [good bacteria](#) outcompete the bad ones for nutrition, binding sites, alteration of environmental conditions such as pH, and potentially host-microbiome interactions. A number of investigators are testing it against other conditions.

But [fecal microbiota transplant](#) is not new. Evidence exists that "yellow soup" was used against intestinal infections 1,700 years ago, and fecal transplant has been used sporadically for pseudomembranous colitis since the 1950s.

Provided by American Society for Microbiology

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